

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



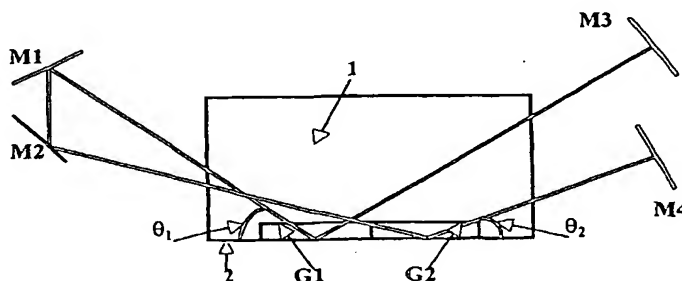
(43) International Publication Date
15 January 2004 (15.01.2004)

PCT

(10) International Publication Number
WO 2004/006395 A1

- (51) International Patent Classification⁷: H01S 3/0941 (74) Agents: MAGGS, Michael, Norman et al.; Kilburn & Strode, 20 Red Lion Street, London WC1R 4PJ (GB).
- (21) International Application Number: PCT/GB2003/002956 (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 9 July 2003 (09.07.2003) (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 0215847.5 9 July 2002 (09.07.2002) GB
- (71) Applicant (*for all designated States except US*): IMPERIAL COLLEGE INNOVATIONS LIMITED [GB/GB]; 47 Prince's Gate, Exhibition Road, London SW7 2QA (GB).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): DAMZEN, Michael, John [GB/GB]; 3D Gunnersbury Avenue, London W5 3NH (GB).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: OPTICAL AMPLIFYING DEVICE



(57) **Abstract:** In an optical amplifying device, an optical beam passes multiple times through a grazing-incidence bounce amplifier, accessing different parts (G1, G2) of the gain region on each transit. This provides improved characteristics in beam quality, with higher power scalability. The multipass configuration can operate as a high gain amplifier device and, with the addition of suitable feedback such as reflectors (M1-M4), as a laser oscillator to provide an optical source.

WO 2004/006395 A1